

PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 81633/6776	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on _____ Signature _____ Typed or printed name _____		Application Number 10/722,290	Filed November 24, 2003
		First Named Inventor Soonkap Hahn	
		Art Unit 1634	Examiner Robert Thomas Crow
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request. This request is being filed with a notice of appeal. The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.			
I am the <input type="checkbox"/> applicant/inventor. <input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96) <input checked="" type="checkbox"/> attorney or agent of record. Registration number 20,856 <input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____			
		/jjs/ Signature James J. Schumann Typed or printed name (858) 552-1311 Telephone number January 29, 2007 Date	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.			
<input checked="" type="checkbox"/> *Total of <u>One</u> forms are submitted.			

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appln. No.:	10/722,290	
Applicants:	Soonkap Hahn	
Filed:	November 24, 2003	
Title:	MICROARRAY HYBRIDIZATION DEVICE	
Examiner:	Robert Thomas Crow	
Art Unit:	1634	
Customer No.:	22242	
Confirm. No.:	9067	

BRIEF IN SUPPORT OF PRE-APPEAL REQUEST FOR REVIEW

Mail Stop: AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Final Office Action mailed October 27, 2006, a Notice of Appeal and Pre-Appeal Request for Review are being submitted contemporaneously herewith.

REMARKS

I. The Final Rejection errs in rejecting claims 1-5 and claims 9-14 because the Examiner has failed to establish a *prima facie* case of obviousness by failing to show any motivation to modify the device of Schembri within the disclosure of Chung et al.

Claims 1-5, 9 and 11-13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,186,659 to Schembri (hereinafter Schembri) in view of Patent Application No. 2003/0123322 to Chung et al. (hereinafter Chung et al.).

Applicants disclose and recite in claim 1 a simple microarray hybridization device wherein a liquid barrier is juxtaposed between a cover and a flat substrate for the attachment of a microarray of reactive moieties. The peripheral barrier creates a chamber defined by the interior wall surface of the barrier, so that the device can be manipulated, e.g. rotated, to distribute a sample liquid sealed within the chamber across the entire microarray. The inherent presence of one or more large bubbles within the liquid solution filling the chamber does not promote effective mixing and intimate contact across the entire microarray during such manipulation/agitation, and the liquid barrier is designed with walls having teeth-like projections that serve as the bubble-fracturing elements. These elements extend laterally into the chamber and effectively rupture bubbles to create a plurality of microbubbles that are effective in mixing and distributing the liquid sample across the entire microarray in this batch-treatment device.

The Schembri device likewise attaches probes to a flat circular glass substrate which is spaced from a second substrate by a peripheral seal to provide a circular chamber into which a test liquid is filled through a central opening, which circular assembly is then rotated. It too relies upon microbubbles to promote mixing and distribute the test liquid across the array in this device that is being rotated; however, a totally different mechanism is employed. As pointed out on page 11 of Applicants' Amendment and Response, at lines 4-13, Schembri creates bubbles by thermocapillary action and creates bubble movement by turning heaters off and on to create temperature gradients by creating a pattern of heat sources, see column 5, lines 33-60. While Schembri mentions mechanical sources as an afterthought of an alternative "means for nucleating bubbles on the inner surface of the glass substrate", Schembri only shows discrete

heat sources and gives no example of how a mechanical source might “nucleate bubbles” (form nuclei from dissolved gas in liquid) from the liquid sample.

The combination of references is improper because it is inconceivable that one interested in microarray hybridization devices would look to Chung et al. to modify the thermocapillary action device of Schembri.

As pointed out at page 11 of the Amendment and Response, Chung et al. show mixers and reactors that can be incorporated into a MEMS device. Although such a device might be useful as part of some overall test or evaluation procedure in the pharmaceutical or biochemical area, there is certainly nothing shown in the systems depicted in FIGS. 1-5 that would relate in anyway to a microarray hybridization chamber where a very small amount of the same liquid sample, less than 1 milliliter, e.g., 50-800 microliters, needs to be distributed across the microarray during incubation to promote hybridization.

The MEMS devices, to which Chung et al. is relevant, are concerned with continuously pumping one or more liquids through chambers of different configurations where mixing and/or reacting will take place as a result of the intermingling of the pumped liquid. The smooth-walled mixing chamber device shown in FIGS. 1 and 2, wherein a pair of pumped streams continuously enter tangentially and exit through a central upper opening, is in no way relevant to a microarray, nor would it suggest adapting a batch treatment device to provide bubble-fracturing elements that extend laterally into a chamber from the surfaces of walls that border the chamber.

The microfluidic reactor of FIGS. 3-5, to which the Examiner directs attention, is preferably employed as a liquid chromatography apparatus; a liquid from which a particular component is to be withdrawn by absorption is continuously pumped through the device at a rate of about 10-40 microliters per second. “Sorpitive material” is applied to the surfaces of the cavity and to the two central baffles for the purpose of separating certain classes of target materials, e.g., nucleic acid polymers or protein polymers. The continuous flow microfluidic reactor is totally unconcerned with the presence or absence of any bubbles, and there is no suggestion or motivation in this disclosure that would cause one to make a modification to the batch-processing device of Schembri.

II. The Final Rejection of claims 6-8 is clearly erroneous because the Examiner has failed to establish a *prima facie* case of obviousness by failing to show where any motivation or suggestion for modification is found in the disclosure of del Valle et al. which has absolutely nothing in common with the microhybridization chamber of Schembri.

Claims 6-8 stand rejected under 35 U.S.C. 103(a) as unpatentable over the disclosures of Schembri and Chung et al. in view of U.S. Patent No. 4,750,556 to del Valle P. et al. (hereinafter del Valle et al.)

The Examiner's position that the helical heat exchange jacket, which is welded onto the exterior surface with a large reactor in which a polymerization process is carried out for the purpose of passing a heat exchange liquid for temperature regulation through the metal jacket, is equivalent to Applicants' recitation of generally triangular fingers that project from the boundary walls into said chamber and have sharp edges at their tips with pockets therebetween is totally untenable. The assertion that the cross-sectional view shown in FIG. 3 through this welded, helical passageway on the exterior surface of a large polymerization reactor would suggest some modification of Applicants' recited structure, because this continuous, helical passageway when viewed in cross-section has a triangular shape, is just clearly erroneous.

III. The final rejection of these claims 23-24 is erroneous for the reasons set forth in Section I above because the Examiner has failed to establish a *prima facie* case of obviousness by failing to show any motivation to modify the device of Schembri which is present in the disclosure of Chung et al.

Claim 23 (and dependent claims 24 and 25) stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schembri in view of Chung et al. and further in view of U.S. Patent No. 5,922,591 to Anderson et al. (hereinafter Anderson et al.).

The added reference to Anderson et al., which is cited for its disclosure of employing a sealable valve in a device of this general type, has no bearing on whether or not there is motivation for one to employ some aspect of the microfluidic reactor disclosure of Chung et al. to modify the microarray hybridization device of Schembri so as to incorporate bubble-breaking elements as a part of the interior surface of a rectangular, perimeter barrier.

CONCLUSION

Applicants submit that the above remarks demonstrate that the final rejection of claims 1-14 and 23-25 is in error and that these pending claims should be indicated as being allowable over the prior art of record. Applicants accordingly respectfully request the final rejection be reconsidered and withdrawn, and that a Notice of Allowance be issued.

Respectfully submitted,

/jjs/

Dated: January 29, 2007

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